PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

John Day River Umbrella

BPA project number: 20514
Contract renewal date (mm/yyyy): ☐ **Multiple actions?**

Business name of agency, institution or organization requesting funding
Oregon Department of Fish and Wildlife

Business acronym (if appropriate) ODFW

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
4.3C, 7.1C, 7.6, 7.7, 7.8, 7.10, 7.10A.2, 7.10A.3

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references
"Integrated System Plan for Salmon and Steelhead Production in the Columbia River Basin," CBFWA 1990. "John Day River Basin: Recommended Salmon and Steelhead Improvement Measures," CTUIR 1984. "John Day River Basin Fish Habitat Improvement Implementation Plan," ODFW 1987. "John Day River Subbasin Salmon and Steelhead Production Plan" ODFW, CTUIR, and CTWSI, 1990. "County Court for the State of Oregon for Grant County," Decision and Order #92-22: Riparian Management Policy 1992. "Upper John Day River Basin Master Water Plan Working Paper," Bureau of Reclamation, 1990. "Malheur National Forest Land and Resource Management Plan," Malheur National Forest 1990. "Stream Restoration Program for the Upper Mainstem Subbasin of the John Day River," Oregon Water Resources Department 1992. "WY-KAN-USH-MI-WA-KISH-WIT," Columbia River Inter-Tribal Fish Commission, 1995. "PATH Project and Columbia Basin Fish and Wildlife Authority's Multi-Year Implementation Plan," CBFWA, 1997.

Short description
Increase egg to adult survival of wild salmonids and decrease pre-spawning mortality of adult spring chinook. The research portion of this proposal is to aid in development of bull trout recovery strategies.

Target species
Target is wild spring chinook salmon, wild summer steelhead (proposed for listing as threatened), and bull trout (listed as threatened). Other species that will benefit are westslope cutthroat trout (petitioned for listing), lamprey, and redband rainbow

Section 2. Sorting and evaluation

Subbasin
John Day

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
☒ Anadromous fish ☒ Resident fish ☒ Wildlife	☒ Multi-year (milestone-based evaluation) ☐ Watershed project evaluation	☒ Watershed councils/model watersheds ☒ Information dissemination ☒ Operation & maintenance ☒ New construction ☒ Research & monitoring ☒ Implementation & management ☐ Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description
20514	John Day River Umbrella
9306600	John Day River Fish Screens
8402100	John Day River Habitat
9801600	Natural Escapement-John Day River
9405400	Oregon Bull/Cutthroat Trout Research

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
9600800	PATH	Data collected by project #9801600 will be used by PATH
9012	Mitigate Effects of Runoff & Erosion on Salmonid Habitat in Pine Hollow	Watershed Council Project that should improve water quality and steelhead habitat
9045	Eliminate Gravel Push-up Dams on Lower North Fork John Day River	Watershed Council project that will improve fish passage and screening and promote more efficient use of water
9137	John Day Watershed Restoration	Remove gravel push-up dams, install more efficient irrigation systems, monitor water temperatures
9303800	North Fork John Day Riparian Fencing	Construct riparian fencing to control livestock grazing
9605300	North Fork John Day River Dredge Tailings Restoration	Reclaim historic dredge tailings to re-establish flood-plain function

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1985	Completion of John Day River chinook salmon study	Spawning survey reaches were changed to reflect new information, estimates of chinook escapement were verified using new information
1985	Beginning of John Day River habitat enhancement project	Redd densities in upper John Day River (in the project area) are on an upward trend
1998	Beginning of John Day River natural escapement study as part of PATH	Extensive and multiple spawning surveys were completed and over 300 scale samples were collected for aging returning adult spring chinook
1997	John Day River Fish Screens	57 irrigation screens were installed or replaced within the basin

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Improve wild salmonid egg to adult survival	a	Install and maintain fish screens on unscreened irrigation diversions and replace existing fish screens that do not meet current NMFS criteria for approach velocities, mesh size, and smolt bypass systems
		b	Improve riparian and instream habitat by constructing and maintaining riparian corridor fences and installing and maintaining instream structures where appropriate
2	Reduce pre-spawning mortality of adult spring chinook salmon	a	Decrease water temperatures in the John Day River and tributaries by improving riparian habitat conditions
3	Monitor escapement and productivity of spring chinook salmon	a	Assess natural escapement and productivity of spring chinook salmon
		b	Compare survival rates of John Day spring chinook to other Columbia and Snake river spring chinook
4	Assess life history and distribution of bull trout in upper John Day River	a	Implant radio tags and PIT tags in appropriately sized bull trout and monitor movements
		b	Determine genetic profile of bull trout in John Day basin
5	Prepare and distribute progress reports and special reports of significant	a	Present significant research findings through the PATH process and at fisheries

	findings.		professional society meetings, publish results
6	Monitor effectiveness of habitat enhancement activities.	a	Set up photo-points, water temperature monitoring sites, and surveys (neotropical birds, vegetation, and spawning fish) to determine effectiveness of riparian recovery

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1985	9/2009	Increase densities of spring chinook and summer steelhead redds observed during annual spawning surveys	Annual spawning escapement estimates of 7,000 spring chinook adults, and 17, 038 summer steelhead	
2	10/1985	9/2009	Decrease pre-spawning mortality of adult spring chinook salmon	Improve inbasin survival to at least 95%	
3	8/1998	7/2003	Monitor escapement and productivity of spring chinook	Complete intensive and extensive surveys each year	
4	7/1997	6/2001	Assess bull trout life history, genetics, and distribution	Collect scales, finclips and implant radio tags in appropriately sized bull trout, determine recovery strategies	
5	7/1997	6/2001	Prepare and distribute progress reports and special reports of significant findings.	Present significant research findings through the PATH process and at fisheries professional society meetings, publish results	
6	7/1997	6/2009	Monitor effectiveness of habitat enhancement activities	Set up photopoints, survey units, temperature monitoring sites, to determine effectiveness of riparian recovery	
				Total	0.00%

Schedule constraints

If steelhead are listed as threatened, a biological opinion will need to be issued by NMFS. A biological opinion has been issued by USFWS for work in bull trout streams.

Completion date

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel			
Fringe benefits			
Supplies, materials, non-expendable property			
Operations & maintenance			
Capital acquisitions or improvements (e.g. land, buildings, major equip.)			
NEPA costs			
Construction-related support			
PIT tags	# of tags:		
Travel			
Indirect costs			
Subcontractor			
Other			
TOTAL BPA FY2000 BUDGET REQUEST			$ 0

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
Total project cost (including BPA portion)			$ 0

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget				

Section 6. References

Watershed?	Reference
☐	Lindsay, R. B., W. J. Knox, M.W. Flesher, B. J. Smith, E. A. Olsen, L. S. Lutz. 1986. Study of wild spring chinook salmon in the John Day River system. Final Report. Bonnevile Power Administration Project 79-4. 119pp.
☐	ODFW, CTUIR, CTWSI. 1990. Columbia Basin System Planning Salmon and Steelhead

	Production Plan, John Day River Subbasin. Northwest Power Planning Council. 116pp.
☐	Buchanan, D. V., M. L. Hanson, R. M. Hooton. 1997. Status of Oregon's bull trout. Oregon Department of Fish and Wildlife, Portland.
☐	Chilcote, M. W. 1998. Conservation status of steelhead in Oregon. Oregon Department of Fish and Wildlife. Portland, Oregon. 108pp.
☐	Confederated Tribes of the Umatilla Indian Reservation. 1984. Recommended salmon and steelhead improvement measures for the John Day River basin. Pendleton, Oregon.
☐	Rhodes, J., McCullogh and Espinoza. 1994. A coarse screening process for evaluation fo the effects of land management activities on salmon spawning and rearing habitat. Columbia River Inter-Tribal Fish Commission Technical Report.
☐	Stuart, A., M. Lacy, S. Williams. 1987. John Day River fish habitat project implementation plan. Oregon Department of Fish and Wildlife. Portland, Oregon.
☐	Beamesderfer, R. C., H. A. Schaller, M. P. Zimmerman, C. E. Petrosky, O. P. Langness, and L. LaVoy. 1997. Spawner-recruit data for spring and summer chinook salmon populations in Idaho, Oregon, and Washington. Report from ODFW, IDFG, and WDFW to BPA.
☐	Schreck, C. B., H.W. Li, R.C. Hjort, and C.S. Sharpe. 1986. Stock identification of Columbia River chinook salmon and steelhead trout. Final Report to BPA, Contract DE-A179-83BP13499, Project 83-451, 184 p.
☐	ODFW. 1987. U.S. v. Oregon John Day River steelhead and spring chinook production report. Portland, Oregon. 55pp.
☐	Platts, W. S. 1991. Livestock grazing. American Fisheries Society Special Publication 19:389-424.
☐	Carmichael, R. W. 1998. Statement of work. John Day basin spring chinook salmon escapement and productivity monitoring. ODFW. Portland, Oregon

PART II - NARRATIVE

Section 7. Abstract

The purpose of these projects is to improve survival of salmon, steelhead, and bull trout by improving habitat, preventing smolts from being diverted into irrigation ditches and improving mainstem Columbia River passage conditions. Habitat improvement projects have been and will continue to be accomplished by constructing riparian corridor fences to improve livestock grazing management, creating fish passage at identified barriers and by installing instream habitat structures. Additional improvements in livestock grazing management will result in increase riparian vegetation, increased habitat diversity, more stable streambanks, cooler water temperatures, and extension of the cool water plume farther downstream. Many fish screens within the John Day River basin were installed nearly 40 years ago and do not meet NMFS criteria for approach velocities, mesh size, or smolt bypass systems because they were designed primarily to protect smolts. Results to date include installation or replacement of 57 fish screens, 66 miles of treated stream, 1,503 acres of riparian habitat, planting 7,450 riparian trees or shrubs, installing 3,040 instream structures and constructing three fish passage structures. These fish passage structures have opened access to an additional 72 miles of stream. Spring chinook redd counts on the mainstem John Day River and Middle Fork John Day River have shown an upward trend for the last 20 years, which we believe can be attributed to improved habitat and improved fish screens on irrigation diversions.

Collecting information on the population status, life history and other data from wild spring chinook will enable managers to determine which strategies will result in the best mainstem Columbia River passage conditions using the PATH Project. Escapement will be estimated by counting all redds observed during extensive and multiple surveys for spawning chinook salmon. Scales will be collected from all spawned out carcasses. Age structure will be used to determine progeny-to-parent production and brood year strength.

Collecting information on the population status, life history and migration characteristics of bull trout and westslope cutthroat in the John Day River will enable managers to determine strategies for protection and rehabilitation of this depressed population. All fish large enough will be pit-tagged to estimate abundance and recapture rates. Larger fish will be radio tagged and movements monitored to determine habitat preference and distribution throughout the spring, summer, and fall. In order to develop population recovery strategies and determine population boundaries, the genetic profile of both species will also be studied.

Section 8. Project description

a. Technical and/or scientific background

The John Day River originates on the west slope of the Blue Mountain in East-Central Oregon. It forms from four major tributaries and flows in a northwesterly direction and enters the Columbia River at rivermile 218. The drainage is 8,010 square miles, which makes it the third largest in Oregon. The John Day River is the largest undammed tributary of the Columbia River and is considered to have the healthiest populations of wild spring chinook salmon and summer steelhead within the Columbia Basin. Economic activities in the John Day basin include ranching, farming, logging, recreation and mining. Native populations of spring chinook salmon, summer steelhead, redband rainbow trout, westslope cutthroat trout, and bull trout remain intact. No hatchery fish are released in the John Day River system to supplement wild populations except in standing waterbodies. Numbers of spring chinook prior to European settlement are believed to have approach 30,000 returning adults, however numbers in recent history have ranged from a low of less than 400 in 1995 to a high of 4,600 in 1987. Summer steelhead numbers in recent years have ranged from a low of approximately 4,000 adults in 1996 to a high of approximately 36,000 in 1987. Anadromous salmonid production for the basin is limited by degraded habitat (CTUIR, 1984), passage at mainstem Columbia River dams (ODFW, 1990) and by poor ocean survival (Chilcote, 1998). The suspension of livestock grazing has the greatest promise of any identified restoration measure for attaining rapid improvement in habitat conditions and salmonid survival within the John Day River basin (Rhodes et. al., 1994). Identifying egg to adult survival is essential for monitoring additional factors limiting production either in the John Day River system or in the Columbia River.

The habitat portion of this project establishes long term riparian, fish habitat and tributary passage improvements on private lands through riparian leases, cooperative agreements and easements of 15 years in length. Individual projects contribute to ecosystem and basin wide watershed restoration and management efforts underway by state, federal and tribal agencies (Stuart et. al. 1987). The project provides off-site mitigation for mainstem Columbia River fish losses caused by Bonneville, The Dalles, and John Day hydroelectric dams.

The screening portion in this proposal is critical for protecting juvenile salmonids and anadromous smolts produced by the habitat improvements specified above. Many of the screens in the John Day system were constructed in the 1950's and 1960's, long before the need to protect all life stages of salmonids was known. The very active screening program in the John Day River system (approximately 300 screens) has contributed substantially to the relatively healthy status of salmon and steelhead. Poorly screened diversions result in the loss of many juvenile salmonids (steelhead, chinook, westslope cutthroat, bull trout, and redband rainbow) that are spawned and survive to emerge from gravels only to be diverted into ditches with screens that have too large of mesh size or too high of approach velocities. Unscreened diversions result in the loss of all life stages of salmonids, including spawned out steelhead adults. Replacing old screens using NMFS criteria will result in even higher survival rates of all salmonids.

The monitoring and research portion of this project is important because the John Day River population of spring chinook has been identified in the PATH process (Beamesderfer et. al. 1997) as a index stock for assessing the effects of alternative future management actions on salmon stocks in the Columbia and Snake river basins. We believe the John Day spring chinook are the most important lower river index stock because the sub-basin supports one of the healthiest populations of wild spring chinook in the mid-Columbia (perhaps in the entire Columbia basin), has no hatchery supplementation program, and there are

no major dams within the John Day system. A study of life history characteristics of spring chinook in the John Day sub-basin was completed by Lindsay, et. al. (1986). However, extensive surveys of all available spawning habitat and age structure information has not been collected consistently since then. Extensive surveys have been completed only in 1989 and 1995, subsequently, up to date information is lacking.

Very little specific information is available regarding bull trout and westslope cutthroat trout populations in the John Day River (Buchanan et. al., 1997). The only information available on the status of the population was from fish screen trap box records, incidental electrofishing activities, and presence/absence surveys conducted by ODFW's Aquatic Inventory Project. To adequately protect critical habitat for bull trout and westslope cutthroat trout within the John Day system, it is necessary to identify bull trout distribution, spawning areas, time of spawning, and migration corridors.

b. Rationale and significance to Regional Programs

The John Day River is managed for production of wild fish only and no releases of hatchery anadromous fish currently exist or are planned in the near future. Maintaining wild populations is becoming more important as more populations of anadromous fish species are listed under the Endangered Species Act. Wild fish are particularly important gene resources in view of the potential loss of genetic diversity through inbreeding and artificial selection found in hatchery stocks (Schreck 1986). Recent revisions of the U.S. v. Oregon Salmon and Steelhead Production Plan (1990) reiterates the commitment to manage the John Day for wild fish. Because of this management strategy, refinements in fish management, habitat improvements, improving screening efficiency and fish passage are the only options for increasing populations. Local watershed councils, Grant County SWCD, Tribes, ODFW, other state and federal agencies have aggressively implemented riparian recovery, screening and other habitat improvements. These projects have improved riparian vegetation, improved bank stability, instream habitat diversity, water quality and quantity, and reduced the number of fish diverted down irrigation ditches.

The recently developed Oregon Plan emphasizes treating the entire watershed rather than just riparian areas and accountability of state agencies for implementing watershed improvement projects. This will result in a more ecosystem based management strategy that should pay long term benefits to all residents of the watershed (wildlife, fish, plants, soils, and people).

Riparian improvement and screening activities that have been completed in previous years are a critical component of the ecosystem based approach. Monitoring is also an essential part of any watershed based recovery strategy. The research and monitoring portion of this project will be able to document survival rates for each brood year and integrate with recovery efforts in other basins. The PATH project will rely on data from this population in the future (Beamesderfer, et.al 1997), and compare survival rates of John Day River spring chinook to those in other Columbia River tributaries. Results of this project may be used to evaluate the effectiveness of hydroelectric operations and fish recovery efforts in the Columbia Basin.

Previous habitat improvements have resulted in increased spring chinook salmon production. Spring chinook redd counts have shown an upward trend in the upper mainstem John Day River during the last 10 years. The upper mainstem is the most intensively treated section of the John Day River. Summer steelhead redd counts on Fox Creek have also shown an upward trend after a large riparian fencing project was implemented on that stream.

c. Relationships to other projects

There are numerous related projects in the John Day River basin that agencies, private landowners or other entities are implementing that will result in improved survival of salmonids. The Confederated Tribes of the Warm Springs Indians (CTWSI) has an ongoing cooperative project with Grant County Soil and Water Conservation District to 1) remove gravel push-up type irrigation dams and replace them with permanent structures that provide year-round passage for all life stages of salmonids, 2) develop more efficient irrigation systems that use less water, resulting in more water left in the stream for fish, and 3) develop irrigation systems that reduce temperatures of water returning to the river after irrigating hay meadows. The North Fork John Day River Watershed Council is also implementing a similar project in the lower

North Fork where they will be removing push-up gravel dams in favor of off-channel pumping stations. These push-up dams can limit upstream and downstream movement of salmonids during low flow periods and because they are constructed every year contribute to streambed instability and streambank erosion.

The Nature Conservancy (TNC) has recently purchased over 1,000 acres on the Middle Fork John Day River that will be managed for salmon habitat. This piece of property was historically managed exclusively for summer long livestock grazing and had degraded riparian conditions. Negotiations with BPA to secure funding to reimburse TNC or to have either CTWSI or Confederated Tribes of the Umatilla Indians acquire the property are ongoing (this may be in lieu of acquiring the Pine Creek Ranch which would have been purchased for fish, wildlife, and cultural resource preservation).

The Umatilla National Forest is currently working on a mine tailing reclamation project on the North Fork John Day River. Historic hydraulic dredge mining has created large mounds of gravel, cobble, and sand lining the river banks which restricts the river to a narrow channel. The reclamation work will result in a more properly functioning floodplain resulting in less bank erosion, more deposition of spawning gravels and natural scouring of pools. The North Fork John Day River Ranger District of the Umatilla National Forest is also constructing riparian corridor fencing on range allotments where other livestock management options are retarding vegetative recovery. This fencing project will have similar benefits as ODFW project #8402100 and allow for more continuity between landownership.

The bull trout/westslope cutthroat trout research project will provide valuable data necessary to the recovery of a listed population (bull trout) and a population petitioned for listing (westslope cutthroat). Limited data is available to assess the population status of the John Day River bull trout and westslope cutthroat populations. Collection of new data will be necessary for estimating numbers of bull and westslope cutthroat trout within the John Day system, determining seasonal distribution, determining spawner abundance and spawning areas, and identifying critical habitat. All these data are critical for developing a recovery plan for these trout throughout the Columbia River basin.

Monitoring natural escapement and productivity of spring chinook in the John Day River will enable managers to evaluate the effectiveness of management and restoration strategies within and outside the John Day River basin. If the monitoring shows a tributary population or productivity is declining then changes in management activities could be made to improve productivity.

The PATH project will rely heavily on data collected during the monitoring of natural escapement and productivity of John Day River spring chinook. These data may be used to evaluate the effectiveness of various hydroelectric operations and fish recovery efforts in the Columbia River Basin.

d. Project history (for ongoing projects)

93606600 Oregon Fish Screening Project

In 1997, BPA and ODFW entered into an agreement to fabricate and install 27 new and/or replacement fish screening and passage devices. The primary goal of the project was to provide adequate fish protection for anadromous and resident fish species from irrigation diversions during migration and while inhabiting their spawning and rearing areas.

The project consisted of numerous project locations throughout the upper mainstem and middle fork subbasins of the John Day River. Project access was established with private landowners, but it took extensive time to develop cooperation and gain acceptance of screen implementation and resource benefits. To date the project has replaced 57 screens in the John Day River basin that now meet NMFS screening criteria for approach velocities, mesh size, and smolt bypass systems.

Project 8402100 Protect and Enhance John Day River Fish Habitat

This project began in 1984 with a signed agreement between ODFW and BPA (#84-21). Reaches of the mainstem John Day River, Middle Fork John Day River, and North Fork John Day River were selected as priorities. The primary goal was to protect, access, create or restore riparian and instream habitat for anadromous salmonids, thereby enhancing opportunities for natural fish production within the basin. This project provided for implementation of Program measure 703 (C) (1), Action Item 4.2 of the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program to rehabilitate instream aquatic and riparian habitats for spring chinook and summer steelhead production as off-site mitigation for fish losses due to the Columbia River hydroelectric system.

This part of the umbrella proposal is comprised of numerous smaller projects throughout the John Day River basin. Riparian leases and instream leases are signed with private landowners for a term of 15 years. This requires considerable negotiating skills, establishing credibility, rapport, and a strong working relationship with landowners.

During early implementation, a variety of management techniques were used, but we found the most effective to be riparian exclosure fences, along with limited instream habitat structures and judicious use of tree and shrub plantings. Recovery rates varied depending on elevation, stream order, upper watershed condition, local climate and past management activities. Higher elevation streams typically recover at slower rates than those at low elevation.

The effectiveness of instream structures alone has been more variable. Specific limiting factors must be identified prior to implementation of instream structure work. Based on prior successes, we have focused on achieving proper functioning floodplains first and foremost. Instream structures are installed only on a case by case bases where they address a specific habitat deficiency. We believe riparian fencing, planting and use of bioengineering techniques do a better job of achieving desired results rather than traditional "hard" structure techniques. As this project has developed, there has been more acceptance and interest by skeptical landowners who have seen their neighbors (who participated early in the process) spend less time on bank stabilization and other associated river work.

Project personnel have assisted local watershed councils, cities, TNC, USFS, and NRCS with their technical expertise on fence construction, structure placement, stream hydraulics, and knowledge about river management. All these activities have lead to increased credibility, greater acceptance of the program by local landowners, and better coordination between local, state and federal agencies.

Major results from this project are: 32 signed riparian leases protecting 59 miles of stream; 1,495 acres of riparian habitat protected; planting of 7,450 riparian trees and shrubs; 3,040 instream structures; and three passage structures allowing access to 72 additional miles of spawning and rearing habitat. Steelhead redd counts on Fox Creek (one of the more intensively treated streams) have risen from 3.8 redds/mile in 1990 to 12.3 redds/mile in 1996, when the basinwide redd counts were 2.2 redds/mile. Chinook redd counts on the upper mainstem have risen from an average of 5.5 redds/mile prior to 1986 to an average of 10.5 redds/mile since 1986. Neotropical bird counts have increased on one project from 20 species in 1986 to 40 species in 1996.

Project 9801600 Monitor Natural Escapement and Productivity of John Day Basin Spring Chinook

This project began in response to the need for additional information about survival rates and productivity of John Day River spring chinook salmon. The study of life history and natural escapement conducted from 1978 to 1984 (Lindsay, et. al. 1986) provided valuable information on production and productivity of John Day River spring chinook. After the project was completed, extensive spawning surveys were conducted only sporadically and scales were collected from spawned out carcasses from 1994 through 1997. There was not enough information to assess age-structure, progeny-to-parent production values, and estimate natural spawning escapement. The PATH project identified John Day basin spring chinook as an index population for assessing the effects of alternative future management actions on salmon stocks in the Columbia Basin. Data collected during 1998 and future years will be used by the PATH project.

During the 1998 field season, multiple spawning surveys were completed on 55 miles of stream, over 300 scales were collected from spawned out carcasses, and extensive surveys were completed on an additional 40 miles of stream.

Project 9405400 Bull Trout Research

Bull trout research began in the John Day basin in 1997 by capturing bull trout in a screw trap on the upper mainstem John Day River and panel traps located in Call, Deardorff and Roberts creeks. Radio tags and PIT tags were implanted into appropriately sized bull trout and the recapture rate and movements were monitored. Finclips were taken from captured bull trout to determine the genetic profile at a later date. Westslope cutthroat trout research in the John Day River basin was initiated in 1998 in response to the petition for listing. This research had limited funds provided by U.S. Fish and Wildlife Service, but additional funds are needed to adequately assess westslope cutthroat trout distribution, life history characteristics, and migration patterns.

e. Proposal objectives

Objective 1. Improve wild salmonid egg to adult survival.

Objective 2. Reduce pre-spawning mortality of adult spring chinook salmon.

Objective 3. Monitor escapement and productivity of spring chinook salmon.

Objective 4. Assess life history and distribution of bull trout and westslope cutthroat trout in upper John Day River.

Objective 5. Prepare and distribute progress reports and special reports of significant findings.

Objective 6. Monitor effectiveness of habitat enhancement activities.

f. Methods

Survival of wild salmonids will be improved primarily by enhancing instream habitat and secondarily by increasing fish screening efficiency. This is accomplished by construction of riparian fencing to exclude livestock grazing, installing instream structures where needed to increase habitat diversity, and construction and installation of new fish screens that prevent 99% of all fish life stages from being diverted into irrigation ditches (Objectives 1, 2, 3). These methods have been used extensively throughout the western United States and have been demonstrated to effectively rehabilitate degraded habitat (Platts 1991, Rhodes et. al. 1994) and save fish. For more specific methods refer to the proposal for project #8402100.

More precise estimates of chinook spawning escapement and progeny-to-parent survival will be accomplished by utilizing commonly accepted methods as outlined in Lindsay (1986). These methods have been widely used throughout the Northwest by all fish management agencies(Objectives 4, 5). Monitoring of chinook population abundance and smolt to adult survival rates can also be used to evaluate effectiveness of habitat restoration activities (Objective 6). Specific sampling procedures are outlined in a work statement for the project (Carmichael 1998)

Distribution and life history traits of bull trout and westslope cutthroat trout in the upper mainstem John Day River will be determined by capturing juvenile and adult trout in traps, inserting PIT and radio tags in appropriately sized fish, and monitoring movement with telemetry receivers (Objective 7). Monitoring of fish movements and determining habitat preferences will also aid in evaluating effectiveness of habitat enhancement projects (Objective 6). More specific details are available in the project work plan (Buchanan 1997).

g. Facilities and equipment

(Replace this text with your response in paragraph form)

h. Budget

(Replace this text with your response in paragraph form)

Section 9. Key personnel

(Replace this text with your response in paragraph form)

Section 10. Information/technology transfer

Data and other information collected during these projects will be available through StreamNet, ODFW annual reports, BPA annual progress reports, ODFW monthly reports, and from technical presentations and published manuscripts.

Congratulations!